LaSalle Street: Financial Markets Insights

The Podcast of the Financial Markets Group

at the Federal Reserve Bank of Chicago

Podcast 3 Transcript

Alessandro Cocco: Welcome to LaSalle Street: Financial Markets Insights, the podcast of the Financial Markets Group at the Federal Reserve Bank of Chicago. I'm Alessandro Cocco and I lead the group. We specialize in research on central clearing, trade execution, financial technology, and systemic stability.

In this episode, we will host a distinguished panel to talk about the Treasury market. The impact of severe stresses in the cash Treasury market in March 2020 and the Treasury repo market in September 2019 reminds us of how crucial this market is to the world's economy.

We will start with the remarks by Sam Schulhofer-Wohl, Senior Vice President and Director of Financial Policy at the Federal Reserve Bank of Chicago. Sam will then hand over to our moderator, Darrell Duffie of Stanford University. Darrell is The Adams Distinguished Professor of Management, professor of finance at the Graduate School of Business and professor by courtesy in the Department of Economics.

Our panelists are: Lou Crandall, Chief Economist at Wrighton ICAP, Ken Garbade, author and former senior vice president, Money and Payments Studies, at the Federal Reserve Bank of New York, and Barbara Novick, vice chairman and co-founder of BlackRock. This episode was recorded on November 10, 2020.

Before I hand it over to Sam, I wanted to remind you to catch our other episodes of LaSalle Street by searching for the Chicago Fed LaSalle Street Podcast on our website, www.chicagofed.org. You can also find us on any major podcast platform. Our prior episodes feature former CFTC chair, J. Christopher Giancarlo, the chief risk officers of Options Clearing Corporation and NASDAQ, and many other leaders from the private and public sectors. And now I hand it over to Sam.

Sam Schulhofer-Wohl: Thank you, Alessandro. I'm delighted to welcome our distinguished panelists. As Alessandro said, the Treasury market is crucial to the economy. We all benefit from better understanding what's needed to keep the market working well. So I'm looking forward to learning a lot from this conversation.

Before I go further, let me note that the views I express are mine and not necessarily those of the Federal Reserve Bank of Chicago or the Federal Reserve System.

The U.S. Treasury market is the deepest and most liquid fixed income market in the world. On an average trading day, about $600 billion of Treasury securities change hands. Bid-ask spreads are typically very small and investors can usually buy or sell large quantities without greatly impacting the market price.

This market matters for many people beyond those trading in it. The liquidity of Treasury securities makes investors willing to accept lower interest rates on them, with benefits throughout the economy.

Most obviously, a smoothly functioning Treasury market reduces the government's borrowing costs. That saves money for taxpayers. More broadly, Treasury rates are a benchmark all across the financial system, so we can see the benefits of a well-functioning Treasury market in the rates on families' mortgages and car loans, the rates on the loans that Main Street companies use to invest and grow, and the rates when local governments borrow to provide public services.

Treasuries also grease the wheels of the financial system and help keep credit flowing to people who need it. Most nights, Treasuries collateralize more than a trillion dollars of overnight lending in the repo market. That lending flows through financial firms and ultimately helps people borrow to buy a home, pay college tuition, or build a business. Banks and other financial institutions also rely on Treasuries to serve as what are called high-quality liquid assets, a buffer that these institutions can count on in times of stress, helping to reduce the risk of a financial crisis. And sitting here on LaSalle Street, I'd be remiss if I didn't mention the Treasury futures market, the derivatives market invented and based here in Chicago that helps investors around the world manage their risks.

So we should all pay attention to how well the Treasury market is working. And there have been two episodes in the past year and a half that made many people sit up and take notice. First, in mid-September 2019, repo rates shot up by hundreds of basis points as a tax due date and a Treasury auction settlement strained the supply of liquidity. Then in March 2020, the functioning of the Treasury market became severely stressed amid the widening pandemic. We'll post a link on our webpage to places where you can read about the details of these events and the decisive actions the Fed took in response. The underlying causes were of course, very different: There was modest financial pressure in one case and a global pandemic in the other. But there is an important commonality. Markets that many people assumed to be unshakeable turned out to be quite shakable after all.

As I said earlier, the depth and liquidity of the Treasury market have served our economy and our country very well. So an important response to the events of 2019 and 2020 is to ask, what can be done to make markets that rely on Treasuries more robust? I'd include in that, not just the cash market, but also closely connected markets, such as repo and futures. Do we need more central clearing as our moderator, Darrell Duffie, has argued? Could regulations be improved? Is the trading ecosystem competitive enough? What role can the Federal Reserve's tools play? There's much to learn, and I hope this discussion can contribute to that process. So with that, Darrell, over to you.

Darrell Duffie: Thank you so much, Sam. It's a great pleasure to be here this morning with you. And I also want to thank Alessandro Cocco and especially the Federal Reserve Bank of Chicago for hosting this. It's a real pleasure to have this opportunity to speak with the preeminent experts on U.S. financial markets that we have here today.

I want to explore the issues that Sam introduced. I'm particularly interested in your views, Barbara, Ken and Lou on not only what happened in March in U.S. Treasury markets and perhaps also in September in U.S. Treasury repo markets, but more importantly, the implications of what happened going forward. What we should do, whether it's regulation or redesign of markets or something else. So I would like to explore all of those issues with you, and I'm really looking forward to this discussion. I think we should dig into this rich set of issues.

Maybe Lou, if you don't mind, I could start with you. If you would, take us through a little bit what happened in March and why it may have happened?

Lou Crandall: First of all, I'm tempted to just start out by saying we really don't know because we still don't have enough granular data about positions and flows to really do the kind of forensics that at least the regulators would like to do. But we do know enough about the general contours of the problem to have a sense of what happened. As pandemic fears spread in early March, the precautionary demand for cash just exploded, and this highlighted one of the eternal verities about the Treasury market, that in a crisis there's no such thing as a cash equivalent, there's cash and everything else.

And all of a sudden, a lot of investors who have been holding their liquidity reserves and Treasury securities wanted to liquidate those to get actual cash. The flood of sales was so massive that it overwhelmed the ability of the dealer system to intermediate all those flows, and liquidity dried up in the secondary market very quickly. A lot of different kinds of players were selling securities at the time, but two in particular standout, foreign central banks and hedge funds.

Central banks were probably the single largest source of selling pressure as it turns out—the Fed's November Financial Stability Report has a very nice discussion of the episode and provides some of the data on it. They point out that foreign central bank holdings or Treasuries plummeted in March, something we knew, but they quantify it very nicely. And at the same time, the amount of cash parked in the Fed's overnight ROP facility for foreign central banks, which is a money fund that the Fed runs for its counterparts abroad, rose very sharply.

So what you saw was preemptive selling of Treasuries in order to stockpile cash ahead of expected problems. That cash would be available either to defend local currencies or to backstop the dollar operations of local banks. But the result was that a lot of securities were dumped on dealer balance sheets and the resulting cash didn't come back into the market; it went to the Fed, where it was not available to finance any of this, though the financing was not the immediate problem.

The role of the dollar as a global currency is really critical here. There are a lot of players around the world who are very active in dollar markets and who rely critically on dollar-denominated funding, but who don't have direct natural access to a financing source. That is a recipe for extremely defensive behavior, and when fears about the functioning of wholesale dollar markets rose, it led to the infamous dash for cash.

The second major source of pressure was hedge funds who were in relative value trades. If you would ask me back in April, I would have certainly said that I thought that was the largest single driver of the problem. The Fed has since pointed out that it was not. And again, I point you to the numbers in the November Financial Stability Report. It was still a significant issue though.

Hedge funds had a large body of futures basis trades on their books at the beginning of the crisis. These are trades where the hedge fund buys cash Treasuries, finances them in the repo market, and then hedges them with futures. It's a trade that normally produces small, but reliable positive returns. That became a little more questionable when market volatility erupted.

The economics of that trade seemed to be driven by two different factors. The first one is that there are a lot of other asset managers who are very mindful of liquidity risk and they're willing to effectively buy liquidity risk from hedge funds in the market indirectly by investing in futures rather than the underlying cash Treasuries, even though they're sacrificing a small spread.

The hedge funds are happy to collect that spread, but an asset manager that's exposed to withdrawal risk would rather be in the more liquid futures than a less liquid cash Treasury. That created an incentive for hedge funds to do this in the first place. Then there was a second factor which emerged during discussions of what actually happened. This is what Josh Younger at JPMorgan has described as a use it or lose it phenomenon, that balance sheet is a very scarce resource for dealers.

When they allocate balance sheet to a customer, they expect that customer more or less to use it. Hedge funds in some cases seem to have been viewing these relative value basis trades as placeholders. They weren't all that exciting in some cases, but they were a way to make use of that balance sheet that you wanted to keep access to in case things got interesting later. When market volatility erupted, a lot of those positions got stopped out very quickly and the hedge funds were dumping more securities onto dealer balance sheets on top of what central banks had already done.

Now, these are not the only people who were selling because everyone was very focused on liquidity. That's a consequence of what happened ten years ago, that regulation requires regulated financial institutions to be very averse to liquidity risk. But also the memory of that means that even unregulated financial market participants are highly mindful of what can happen when liquidity evaporates. All of that led to extremely large and persistent sales of Treasuries and overloaded the dealer system.

And that observation gets us back to the original use it or lose it proposition that because balance sheet is a scarce resource for banks, they have an incentive to utilize it as fully as possible across as many dimensions as possible all the time. And I say across as many dimensions as possible because banks are facing a really diverse set of constraints, whether it be liquidity, capital, resolution planning.

There are a number of different constraints that they face and they want to be as close as possible to the maximal allowable exposure at all times. Otherwise, they're leaving some of their balance sheets lying fallow, and that hurts their returns. But what that effectively means is that a) the complexity of the regulations makes it very difficult to optimize positions on the fly because you don't know how adjusting one part of the balance sheet will affect a different calculation.

But also means you're essentially at a corner solution much of the time. So unlike the last crisis, the large financial institutions did not cause the liquidity run. But on the other hand, the nature of regulation today means that they weren't in a position to counteract it either.

Darrell Duffie: Lou, that's really helpful. Before I move to Barbara and Ken, I just want to follow up on one point that you raised. You mentioned that the Fed has responded that the largest demands for liquidity and this dash for cash with Treasuries were actually coming from the foreign official sector rather than the hedge funds on the cash futures basis trade unwinds. In fact, it was vice chair Quarles when he spoke here at Stanford, who mentioned that first.

Do you think that the foreign official sector demands for cash were related to sourcing dollar liquidity for their banks, or for their own asset management purposes, or maybe foreign exchange reserve management? I noticed that the Fed responded quickly with swap lines and foreign official sector repo facilities. Does that indicate that they didn't have enough dollar funding?

Lou Crandall: Did I say at the outset—did I remember to say at the outset that we really don't know what caused all of this? I've heard all three of those stories and I would guess that the biggest single factor on the foreign official side was just generalized liquidity caution. That they were stockpiling cash and they weren't quite sure what they would need it for, but they knew that an awful lot of very bad things could happen.

So I would say there was no cost to moving to cash to them, there was to the system. And again, this is not a question of pointing fingers. Just the basic fact is that if we want institutions, whether it be foreign official or domestic institutions to treat Treasuries as a cash equivalent or finding ways for Treasuries to be able to serve as cash equivalents would be a very important policy objective.

Darrell Duffie: I totally agree with that. Barbara, if it's okay, I'd like to turn to you and get your sense of how the Fed responded in this dash for cash. How well did they do and what did they do?

Barbara Novick: If I could beg for a little levity here. Lou, I think the answer to your question is the same answer as why was there no toilet paper in the stores for months? Anyway, back to Treasuries. I think you have to put things in perspective. And if we look back over the last decade, there have been changes in regulation, but there's also been significant changes in market structure.

And if you think back to the report that was led by Antonio Weiss when he was at Treasury, what he, I won't say discovered, but what he really put focus on was large banks and broker dealers were no longer the primary source of liquidity in the Treasury market. And in fact, there was a significant shift to principal trading firms. And that had gone kind of unnoticed until that report came out.

But it has major implications because when you look at the size of the Treasury market, the growth of the Treasury market, you have to step back and say, "In the current regulatory environment, is the market structure fit for purpose?" And I think we can all agree, no would be the answer. So what happens in the crisis is the banks stepped back because of all the reasons Lou just outlined in terms of their own balance sheet and concerns.

They have to meet contractual obligations for things like lines of credit. They're going to harbor all the liquidity they can to meet those things, very rational decisions, but impactful to what limited participation they have in the market structure and not doing any intermediation. You then look to just the principal trading firms. They also stepped back because of the lack of information that's available. They turn off their algorithms and say, "You know what? I'm going to turn off, step back until we have more certainty here."

So now you've taken out the two primary sources of intermediation, not a terrible surprise, there would be a big problem. So the Fed steps in, I give them huge credit for what I call very bold and very decisive actions. Swiftly they step in, first thing they do is they start buying Treasuries. That frees up balance sheet on the banks' part, they can now buy some more, they have some room.

But they also introduced a host of other programs because as you realize this dash for cash doesn't end with Treasuries, it hits commercial paper, it hits municipal bonds, it hits corporate bonds, it hits not just mutual funds, but all investors. Everybody is heading for that cash trade at the same time, which takes me back to the toilet paper analogy is, wow, I think I might need it, so I'm going to go get it now, even if I don't really need it now. And then I'm going to stockpile it until someone calls the all clear signal.

And that's essentially what we saw. We can talk later with some of your questions, but there are some ways of addressing this and it's not just wave the magic wand, one specific thing, but really a series of things that would need to be changed to make this not happen again.

Darrell Duffie: Thanks, Barbara. And just to follow up, you mentioned that other asset classes also suffered these large demands for liquidity and dash for cash. In the case of the Treasury market, the Fed really had to buy a whole lot, a trillion of Treasuries in just three weeks. But in the case of the corporate bond market, the mirror announcement on March 23rd was enough to drive down corporate bond spreads dramatically.

So why was it enough merely for the Fed to announce that it was planning to do something? And in fact never did much for quite some time after that announcement.

Barbara Novick: If you look at the take-up in the programs that were announced, it's actually quite modest. The mirror announcements, it's, call it behavioral economics. It gave so much to the market. So if you go back to what I said earlier, if all you're doing is hoarding the cash because you don't know, there's uncertainty, you're figuring I want to be first, I want to hold it. I want to put it in the mattress, or the safe, or wherever I'm going to put it. And when someone calls the all clear, I'll be happy to put it back out there.

And essentially, that's what happened, is the Fed first, they purchased stuff, that was helpful, but then they started announcing these other programs. Once they made the announcement that they were going to buy other things, that was the all clear signal. And you see it so vividly in the new issuance numbers. New issuance for high yield went to basically zero and new issuance for corporate bonds also went quite low.

Subsequently, and starting almost the day after the announcement, you see both of them start zooming up to near record levels. So that investor confidence that there would be liquidity in the market was such an important signal.

Darrell Duffie: Yeah, I completely agree with that. I'm going to ask Ken now. Ken, based on your writing when you were at the New York Fed, I actually learned that this was not the first time that the Fed has felt itself forced to come in and rescue Treasury markets from illiquidity. I learned from your work that it's happened before. Can you fill us in with the historical background of the Fed's role in coming to the rescue of the Treasury market and why that's important?

Ken Garbade: The Fed's concern with an orderly, it was called an orderly market first appeared in about 1935 when the new FOMC under the 35 Act was just getting organized. Four years later, in September 1939 at the onset of World War II when Germany crossed its Eastern border into Poland, the desk in the New York Bank intervened in a highly significant way, quantitatively significant to buffer if you will, the downdraft in the market associated with the selling.

Within a matter of about two or three weeks, it became clear that the Fed was willing to provide substantial liquidity. And by the end of 1939, prices had recovered to their pre-war level. The Fed intervened again, the desk intervened again in the summer of 1958 when the Treasury brought a one-year offering that was very poorly received prior to the close of the subscription books at that time; offerings run a fixed price basis and the desk intervened to prevent a failed offering.

And it intervened again in May of 1970 when the Treasury was in the midst of another fixed price offering and President Nixon announced the incursion into Cambodia, which led to wide scale disruptions in the market. So the idea of the Fed intervening when there is a significant downdraft in the market is not novel, it's been with us for decades, although it is infrequent.

Darrell Duffie: Thanks, Ken. So you're saying this is different from quantitative easing. When Chair Powell said in that famous March 15th press conference that the Fed was intervening to provide liquidity to markets, that was not to be interpreted as the Fed wanted to keep Treasury yields down, it was something else.

Ken Garbade: No, exactly. I think it was predicated on a belief that the market was having trouble identifying an equilibrium term structure of interest rates at which purchase and sale interests would approximately balance across the curve. And that it was a response to a transient problem rather than a policy operation.

Darrell Duffie: Before we move on, I'm interested in whether the Fed's continued purchases, the $80 billion a month of Treasuries and $40 billion a month of Agency MBS, are they still about market dysfunction or is this morphed into a kind of quantitative easing or something in between? Has anybody, any of you Barbara, or Lou, or Ken have a view on the continued purchases of Treasuries and the objective for those? Are the markets not liquid again? Or is this a stealth quantitative easing or what's going on?

Lou Crandall: I'd love to hear what Barbara has to say about this when we're going to take a quick stab at it. The continued purchases of Treasuries at the front end of the market don't seem to serve any real purpose except to continue to float the Fed's balance sheet. On the other hand, we've been going through a period where market confidence is potentially fragile. Many investors would view a decline in what they've considered QE as a very adverse signal.

It's been difficult to find the right time to adjust this just because there's a mystique about QE that makes it difficult to communicate about it. So I think they've been playing for time. Barbara?

Barbara Novick: I would add that we have two things happening that haven't been factored in where... They are factored in by the Fed. One is, Covid is not over. We're talking about Covid as this March crisis and we're all sitting here on Zoom from home. Covid's not over and we're very excited about the positive news on the vaccine. There does look like there's light at the end of the tunnel and I think all of us are ready to go out and celebrate, but widespread availability is still months away.

So you do have, I think that impact, and obviously a second wave in Europe, a second wave in the U.S., a lot of uncertainty about corporations, their solvency. And I think there's concern about bank balance sheets and what will happen if people who've had forbearance for a long time suddenly are asked to catch up. Nobody was getting rid of all their debt, comes to roost. That's I think the number one issue.

The number two issue is we happen to have had this election [on November 3]. I know we all thought we had five Tuesdays last week, but it is a pretty big event. There was a lot of uncertainty. There was, I think, a lot of concern about what would or wouldn't happen. How would people, individuals react. You saw many downtowns were boarded up, and there's just, I think a very high level of concern. Those kinds of things are times when you want liquidity in the system. So I think those two events or two, they're not really events, but two things really come together in a way that makes sense for the Fed to provide liquidity.

Darrell Duffie: Okay, I get it. It's about confidence and market liquidity. That's very helpful. I'd like to turn a page now and talk about whether, what we all agree to have been a very effective and necessary intervention by the Fed has any costs. Does it seem like it would be effective or appropriate to rely on the Fed? The Fed could essentially, in every such instance, Ken laid out a series of Fed interventions over the last century. It seems like the Fed could bring markets back to liquidity by intervening any time that this happens in the future.

Why shouldn't we rely on the Fed to simply take care of these problems as they come up? Are there any costs? Does anybody want to react to that?

Barbara Novick: You do have an issue of moral hazard. So if you believe the Fed is going to come in and be a liquidity provider of last resort and buy all sorts of assets anytime there's a problem, people may take more risk, either going out the credit curve or going down in liquidity of assets. There may be more risk-taking than otherwise, same with leverage and other techniques. So I do think it's not a free option that you want to have available because it will impact behavior in a way that increases risk to the system.

Lou Crandall: I fully agree with that in general, but I would say that one option here is to focus on the Treasury market in particular because when it comes to... There are clear moral hazard issues that the Fed has raised with all the 13(3) programs that it's implemented. But I don't think there's a whole lot of moral hazard risk in encouraging people to treat Treasuries like money. That to the extent that we can develop institutions that makes that a very rational thing to do, I think that's an ideal outcome.

For one thing, I think it's the perfect bridge over the next 10 to 20 years as we evolve toward interest-bearing central bank digital currencies, which I think have to be in our future. And we're going to have a... If that does evolve, the distinction between central bank deposits and Treasury bills will essentially disappear. Treasury bills presumably won't exist in that world. And I think that having the benefits of that kind of highly liquid safe assets during that bridge period is really something worth working toward.

Darrell Duffie: Ken, what are your views? Barbara mentioned moral hazard. Is there a moral hazard or is there an issue of reliance on the Fed to get us out of these issues as they come?

Ken Garbade: The moral hazard dimensions Barbara was talking about, if they come to pass would naturally lead to regulatory responses to more relentlessly monitor, leverage, monitor liquidity of existing positions. I'm not sure that would be welcomed by all market participants. I'm also mildly concerned with the notion that what the Fed has been up to since March is liquidity maintenance. That's a long time, that's a long program of liquidity maintenance, six months.

We don't really have a historical precedent for central bank intervention to maintain liquidity over that long period. And I think one would have to ask what the longer run implications of that are. With respect to Lou's comment about central bank money, I think when people... I'm not sure exactly how to interpret what he said, but it seems like he's ignoring the question that when people want to switch from one asset allocation to another, as from bills to deposits at the Fed, that that's the kind of illiquidity that we saw in March and that would seem to require a central bank intervention to facilitate that when it's on a large scale.

I ask Lou, would you contemplate the Fed continuing to support those kinds of asset reallocations in times of stress?

Lou Crandall: Probably not, but that's at a point where Treasuries become more... The distinction between Treasuries as a cash equivalent and Treasuries as a duration vehicle is blurred right now because you have this continuum from the very short end to the long end. Treasuries in that world start to become a risk asset because you have the ultimate safe asset at the front end, in the form of actual digital cash that's easily transferable, not just among banks, but among all, at least at the outset all wholesale market participants.

What this is going to look like, I have no idea. I just suspect that when there are discussions about whether we need to shrink the Fed's balance sheet in the years ahead, the long run outlook is for a larger and state balance sheet, not a smaller one. And there are important questions of how we manage market institutions between now and then, but I think the recognition of financial innovation is going to continue to be prevalent as a big part of the context for this discussion. So, no, I didn't answer your question, Ken.

Darrell Duffie: There's one thing that I think everyone has agreed that the events of March are probably a signal that this is going to happen again as the Treasury market gets very, very large relative to the size of the current intermediaries in the market. I noticed that the congressional budget office is projecting that we're going to go from about $20 trillion in Treasuries at the beginning of this year to about $120 trillion of Treasuries in 30 years.

So whatever happened in March, if it overwhelmed dealer balance sheets, it's not going to take as big an event going forward unless there is some change. And that's the subject to which I think we ought to turn next. I wish we had time to talk about all these things in much more depth, because this is an opportunity for me to learn from you three. But considering what we've witnessed, what could be done without relying on the Fed as a backstop?

It's always going to be there in the last resort, as you all seem to agree, but what can be done to improve the liquidity of U.S. Treasury markets so that the events in which the Fed has to step in are fewer and less extreme? Maybe I could start with you, Ken. Do you have a view on this? What could be done?

Ken Garbade: I start with the proposition that the primary purpose of a market is to identify equilibrium prices, and in the case of the Treasury market across the whole term structure of interest rates. So you have to ask then, what would the impediments to identifying equilibrium prices? One would be whether there was insufficient dealer capital, and I'll use the term dealer broadly, not just primary dealers, but also actively engaged on a continuing basis market participants.

Whether that'd be a possibility of introducing private sector, introduction of some form of surge capital in the same way we have backstops for power production and things of that nature. So the dealers could access that kind of surge capital on short notice to carry positions, but not have to maintain it on a continuing basis when they don't have any need for it. The possibility of shortening the settlement cycle; most of the bulk of Treasury security settle on a trade plus one business day basis.

There have been times in the past when under situations where there were fails problems, the market was considering going to a T+2 or T+3 basis for more trades in order to straighten out their books before they were called upon to settle. Similarly, you might be able to shorten the settlement cycle to settlements within a day. And then the extension of central clearing mechanisms like the fixed income clearing corporation to larger numbers of market participants would facilitate the settlement process.

Darrell Duffie: Those are very, very helpful ideas. Barbara, you work at the world's largest asset management firm. From your perspective, what might be done to improve the ability of the market to function without rescues from the Fed?

Barbara Novick: I largely agree with what Ken just said. And again, I think it's always good to step back. In this case, I think we have to start by understanding the whole ecosystem. Some people call it a holistic approach, but we don't have one participant or one node that broke. We have a whole lot of things that are very interconnected. I like to use an example, the CCPs raised margin, totally rational decision on their part. They raised margin because that was a risk management decision, but it happens to also be procyclical.

So then people come in and they say, "I need cash to pledge to the CCP. Where am I going to get cash?" Maybe they're going to sell Treasuries, or maybe they're going to redeem from a money market fund. If they redeem from a money market fund, all of a sudden money market funds need to sell commercial paper. They want to sell commercial paper, they go back to the banks because the market structure for the commercial paper relies on individual banks who sold you the commercial paper.

But we've already talked about the banks are closed for intermediation because they're worried about meeting the lines of credit from the corporate treasures. So there's a great example of a chain where that chain is so interconnected and each node along the way has an implication for the next node. So I don't think there's an easy solution, I think you have to step back, you have to look holistically, you have to understand that interconnectedness, and then you have to come back and say, "Okay, so let's start with the bank regulation."

Banks coming into this crisis much better capitalized, better capital, better liquidity, much stronger. That's really good, but they also have very limited ability to use their balance sheet. They end up stepping back from intermediation, even when the Fed and other central bank regulators say to them, "It's okay, you can use your buffers in a countercyclical way." They all put up their hands and say, "No, no, no. The rating agencies are going to look at this differently and investors are gonna look at this differently. I don't want to be penalized."

So even with the verbal guidance, they don't do anything until the Fed puts out those other programs where they say, "We'll have a lending facility. We'll do this, we'll do that." All of a sudden the banks open up. But I think you have to start with the bank regulation and say, "Is it sized right? Is it written appropriately? Can we do something so that in a liquidity crisis like this," which I, by the way, consider a global natural disaster. It didn't start in the financial system, it started somewhere else and came into the financial system.

So in that kind of situation, can there be an acceptance that banks will use their buffers? And are supposed to use their buffers. What's the point of a buffer if you can't use it. So that would be I'll call pillar one is, let's look at the bank capital and liquidity regulations and maybe provide some relief on a very systematic basis.

Second would be central clearing, which I know Darrell loves. It is an idea he has championed and we're starting to see more talk about that. Is it central clearing specifically? Is it some kind of oil to oil platform? There to be some kind of innovation in this area to improve the market structure. Even if the banks are changed, there's still need for market structure improvements, and I consider this the second pillar.

If there's no change to the bank regulation, there's a desperate need for market structure. But I still say, even if you get some relief at the banks, the size of this market, you need some market structure improvements. We're in a world of financial innovation technology. It seems like the time is ripe for regulatory-encouraged solution.

And then lastly is, we've heard a lot about the lack of data. We still don't know exactly what went wrong. We don't have the data, we don't have the information. The people who are making markets, these principal trading firms, they rely on data and it has to be high-quality data, and it has to be a lot of it. So we have to get the data right so that that element of the ecosystem continues to work well. And I think we're falling a little bit short on that, and I think that's the third pillar in this case.

Darrell Duffie: Thank you. Lou, I want to get your reactions in general, but I'm particularly interested in your views on Barbara's pillar two. I do champion central clearing because I do think it's both important for the resilience and safety of the market, but also it's the gateway to all trade, which has been mentioned, including in the Financial Stability Report that you mentioned in your opening response.

Do you think that a change in market structure or an improvement in market structure is a key step? Or it's just one of the "might want to have" kinds of things? And going beyond that, can you remark in general on what kinds of improvements that we need in order to be able to handle these dashes for cash?

Lou Crandall: I'm tempted just to refer the audience to all of your papers on the subject, which lay out the case very well, Darrell. But I agree with everything that Ken and Barbara said. Ken was talking about delayed settlement. Delayed settlement is just liquidity sinkhole when volumes rise. It has a spiraling effect because it just means more capital ends up being chewed up during that delay.

As far as central clearing goes, yes. There's a lot of debate about whether we should have a bank-based credit system or a market-based credit system. Both of those two models have their advantages and their disadvantages. The Treasury market has the worst of both because it is a fundamentally market-based system subject to all of the animal spirits volatility that we associate with capital markets, but it runs through a structure of dealer banks that have all of the capital constraints of a traditional bank-based finance system without necessarily the relationship support levels.

Certainly relationships matter a great deal in this market, but as we saw in March, not enough to really expand balance sheets when other parts of the bank, as Barbara was saying, were under balance sheet pressure because of credit line drawdowns. So getting out of the negative intersection of the market-based and bank-based finance systems the Treasury market occupies strikes me as important. And the thing about central clearing is that unlike some of the other things we would like to do, it strikes me as being achievable.

I fully agree that we need to find a way to get banks to manage their capital more countercyclically, but we've learned over the decades, we make exactly the same argument about the discount window. The discount window is there, banks should be ready to use it. Nobody's going to, the stigma is so entrenched. And again, after the last crisis, we created a culture of liquidity risk aversion, and that's deeply ingrained. It's ingrained in the supervisors, in the compliance staff, and in the people who are tasked with making sure they never have to tell the CEO that they breached their LCR floor.

So I hope that by institutionalizing a countercyclical capital buffer or something along those lines, we can give the idea of countercyclical capital management more legitimacy within the banking community. But as Barbara said, the rating agencies are still out there. So while that's certainly an important objective, it's one the outcome of which you're never going to know until it's too late if you didn't succeed in breaking down that culture.

One thing about central clearing, I probably have a more expansive view of what the Fed's role is, the Treasury's fiscal agents should be, the most people. I think it should embrace that role with both hands. So I think a standing repo facility available on fairly widespread terms would be important. One of the things they did during the crisis was create a standing repo facility for foreign central banks. All of a sudden the spigot got turned off, then once foreign central banks knew they could get cash in exchange for a Treasury with a phone call all of a sudden the precautionary, say, wave of selling dried up.

I think usage of that facility peaked at $1.4 billion in April, has been zero most weeks. Somebody has been rolling a billion dollars a day for the last three weeks. We don't know who, but it fundamentally changed liquidity management of foreign central banks. There is a lesson to be learned there.

I do grant, I understand that there can be moral hazard issues if you have a widely available standing repo facility—that's difficult to design. But here's one intermediate step which speaks to your proposals. I absolutely think that there should be a standing repo facility for Treasury securities held as margin by CCPs. That there is absolutely... CCPs can't treat Treasuries as fully liquid, that drastically increased the costs of central clearing. If the DTCC had—it would not need its members to underwrite its liquidity fund, if it had an SRF from the Fed.

That strikes me as one where the social benefits of doing it are extremely high and the moral hazard costs are essentially nil. Again, I don't think incentivizing people to invest in low-yielding Treasury securities as a liquidity buffer, that doesn't strike me as encouraging bad behavior.

Darrell Duffie: That's extremely helpful. Gosh, we have spent an almost an hour together in what I viewed as an extremely enriching discussion, and I still have more questions on my list that I'd love to go through with you three. That's a rare opportunity for me and for all listeners. However, the Federal Reserve Bank of Chicago has budgeted a certain amount of time for this, so I think we need to simply thank you three for an exceptionally helpful discussion of these issues and turn it back for a close to the Federal Reserve Bank of Chicago.

Alessandro Cocco: Thanks, Darrell. I would like to thank our panelists for joining us today, and I would like to thank you for moderating the panel. There will be more opportunities to discuss these important issues as we continue to analyze developments in this market. And thank you to our listeners for joining today. This concludes our program.

Barbara Novick: Thank you.

Lou Crandall: Thank you very much.

Ken Garbade: Thank you.